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## NOTICE OF ALLOWANCE AND FEE(S) DUE

7055 7590 11/04/2008  
GREENBLUM & BERNSTEIN, P.L.C.  
1950 ROLAND CLARKE PLACE  
RESTON, VA 20191

EXAMINER	
NOAKES, SUZANNE MARIE	
ART UNIT	PAPER NUMBER

1656  
DATE MAILED: 11/04/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,317	09/26/2005	Atsushi Miyawaki	P26359	5682

TITLE OF INVENTION: PIGMENT PROTEIN

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	02/04/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE** OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

### HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to:** Mail **Mail Stop ISSUE FEE**  
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**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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nonprovisional	NO	\$1510	\$300	\$0	\$1810	02/04/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
NOAKES, SUZANNE MARIE	1656	536-023100

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB-122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB-47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_  
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_  
 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_  
 Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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7055	7590	11/04/2008	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			NOAKIS, SUZANNE MARIE	
			ART UNIT	PAPER NUMBER

1656

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## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 67 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 67 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

**Notice of Allowability****Application No.**

10/516,317

**Applicant(s)**

MIYAWAKI ET AL

**Examiner**

SUZANNE M. NOAKES

**Art Unit**

1656

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendments and response filed 05 September 2008.
2. ☒ The allowed claim(s) is/are 11-15 and 18-20.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_.

## **EXAMINERS AMENDMENTS**

### ***Status of the Claims***

1. The amendments to the claims, specification and abstract filed 05 September 2008 are acknowledged.

### ***Withdrawal of Rejections/Objections***

2. Upon further consideration by the Examiner as well as Applicants Remarks, p. 6, the objection to the Oath is hereby withdrawn.
3. The rejection of claims 11, 14, 15 and 18 under 35 U.S.C. § 112, first paragraph, written description (see previous Office action, Section 11) is withdrawn in view Applicants amendments to the claims and the modifications made below in the Examiner's Amendments below. Specifically removing all references to "an amino acid sequence" over comes said rejection of record.
4. The rejection of claims 11, 14, 15 and 18 under 35 U.S.C. § 112, first paragraph, written description is withdrawn in view Applicants amendments to the claims and the modifications made below in the Examiner's Amendments below. Applicants amendments to the claims to recite changes to SEQ ID NO: 1 are one to ten amino acids overcomes the enablement issues. In addition, deletion of "an amino acid sequence" also overcomes the remainder of the scope of enablement issues.
5. The rejection of claims 11, 14, 15 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Lukyanov et al. (US 6969597) is overcome by Applicants amendments to the claims which remove "an amino acid sequence" which can read on

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a fragment or protein with as few as two contiguous amino acids of SEQ ID NO: 1 with light absorbing properties. Lukanov et al. taught such a protein (see previous Office action, Section 14). Thus the amendments to the claims necessitate the withdrawal of this rejection.

### EXAMINER'S AMENDMENT

6. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Arnold Turk and Dr. Walter Schlapkohl on 29 October 2008.

The application has been amended as follows:

#### ***In the Specification:***

Please amend the title to : "Pigment Protein from *Cnidopus japonicus*"

#### ***In the Claims:***

- Cancel claims 1-9, 16 and 17.
- Amend the indicated claims as follows:

11. (Currently Amended) An isolated DNA of either one of the following:

(a) DNA encoding the amino acid sequence shown in SEQ ID NO: 1, wherein said SEQ ID NO: 1 has light absorbing properties but does not emit fluorescence, or

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(b) DNA encoding the amino acid sequence shown in SEQ ID NO: 1, which further comprises a deletion, substitution and/or addition of one to ten amino acids and has modified light-absorbing properties and/or emits fluorescence.

12. (Previously Presented) An isolated DNA having the nucleotide sequence shown in SEQ ID NO: 2.

13. (Previously Presented) An isolated DNA having the nucleotide sequence shown in any one of SEQ ID NOS: 12, 14, 16, 18, 20, or 22.

14. (Previously Presented) A recombinant vector having the DNA of claim 11.

15. (Previously Presented) An isolated transformant comprising having [[:]] the DNA of claim 11 or a recombinant vector having a the ~~DNA encoding an amino acid sequence~~ of claim 11.

18. (Previously Presented) A light-absorbing reagent kit comprising the isolated DNA of claim 11, ~~a recombinant vector 11, or a transformant having the DNA of claim 11 or the recombinant vector having DNA encoding an amino acid sequence of claim 11.~~

19. (New) A light-absorbing reagent kit comprising the recombinant vector of claim 14.

20. (New) A light-absorbing reagent kit comprising the isolated transformant of claim 15.

### ***Reasons for Allowance***

7. The following is an examiner's statement of reasons for allowance: The claims are drawn to isolated DNA which encodes a chromoprotein of SEQ ID NO: 1 from the organism *Cnidopus japonicus*, wherein said chromoprotein does not naturally fluoresce

in its wild-type form (see p. 9, 3<sup>rd</sup> paragraph of instant specification) but does absorb light as most chromoproteins do. By introducing various substitutions at certain amino acids, the chromoprotein can be made to shift its light absorbing properties and also to emit fluorescence. The claims are thus also drawn to various DNA that encodes proteins having one to 10 amino acid substitutions made to SEQ ID NO: 1, which also continue to absorb light (but which will also emit said light) – see pp. 9-10 of specification for examples. The claims are also drawn to recombinant vectors, isolated transformants and kits containing said isolated DNA which encodes said proteins. The closest prior art to SEQ ID NO: 1 is Lukanov et al. which describes DNA encoding a chromoprotein which is about 63% identical to the instant SEQ ID NO: 1. It is noted that SEQ ID NOS: 12, 14, 16, 18, 20 and 22 are simply DNA sequences with specific mutations made to the DNA encoding SEQ ID NO: 1 (SEQ ID NO: 1 is encoded by SEQ ID NO:2) - see Example 5, pp. 24-26 of instant specification. While many different chromoproteins are known, such as the green fluorescent proteins (GFP) from the genus *Aequorea*, and these chromoproteins have an overall common structure (e.g. an eight stranded beta-barrel with a single alpha-helix which ligates the chromophore located in the middle of said barrel), isolating new chromoproteins encoded from novel DNA sequence from different organisms such as *Cnidopus japonicus* is considered both novel and non-obvious. Thus, the instant claims are both novel and non-obvious over the prior art of record. **The allowed claims are 11-15 and 18-20.**

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably



accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Reference of Interest***

8. Applicants post-filing non-patent literature of Chan et al., 2006, Journal of Biological Chemistry, Vol. 281, No. 49, pp. 37813-37819 – details the crystallization of the instant SEQ ID NO: 1, which confirms that said chromoprotein retains the overall tertiary structure of the majority of chromoproteins which have an eight-stranded beta-barrel with a single alpha-helix in the center of said barrel which ligates the respective chromophores (see Figure 3B, p. 37816) and that said protein retains most, if not all, conserved amino acids when compared to other well-known chromoproteins (see Figure 1, p. 37815).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUZANNE M. NOAKES whose telephone number is (571)272-2924. The examiner can normally be reached on 7.00 AM-3.30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen Kerr Bragdon can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Suzanne M. Noakes/  
Examiner, Art Unit 1656  
29 October 2008